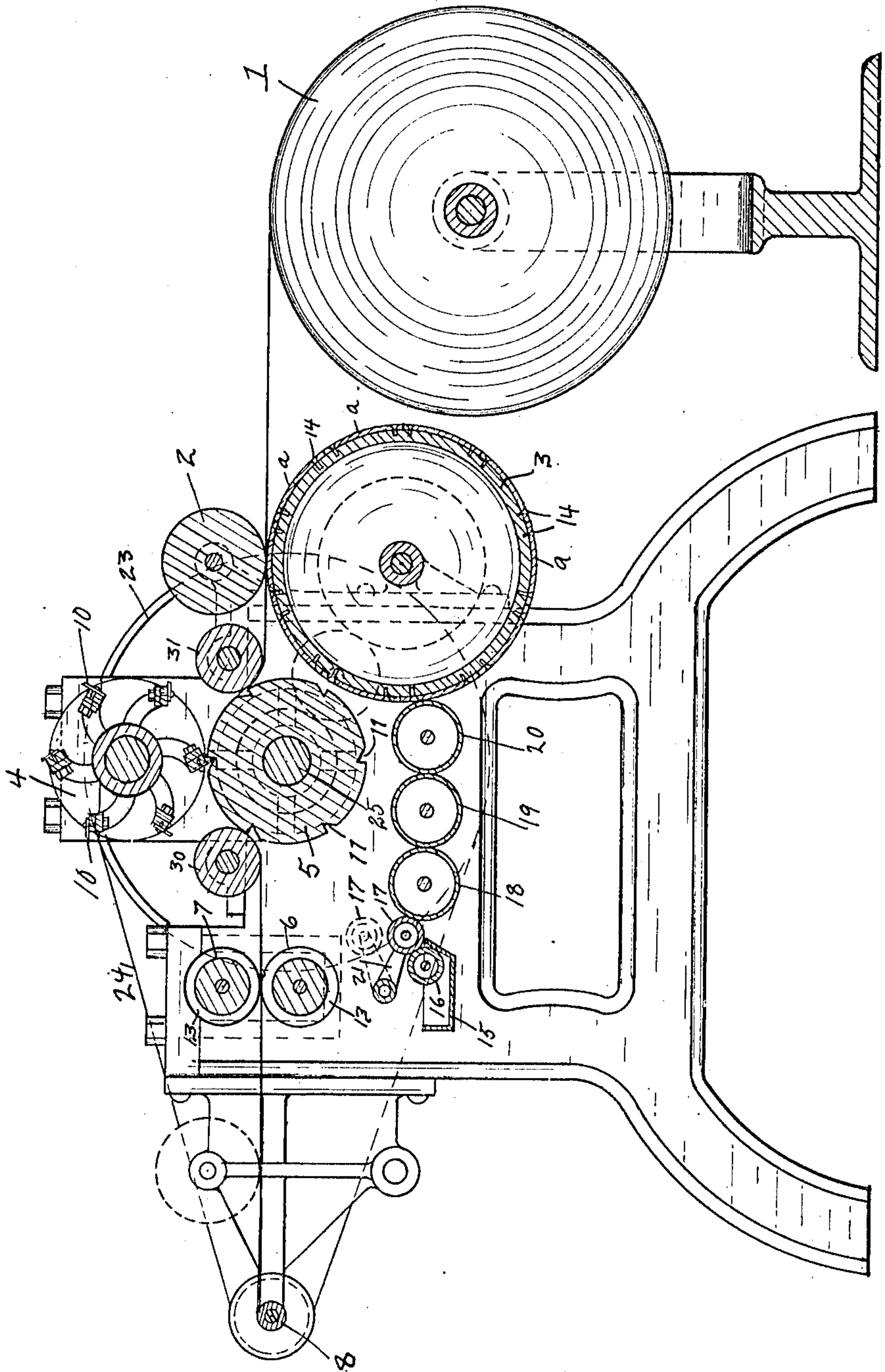


950,482.

F. H. HOBERG.  
EMBOSSING ATTACHMENT.  
APPLICATION FILED NOV. 19, 1906.

Patented Mar. 1, 1910.  
2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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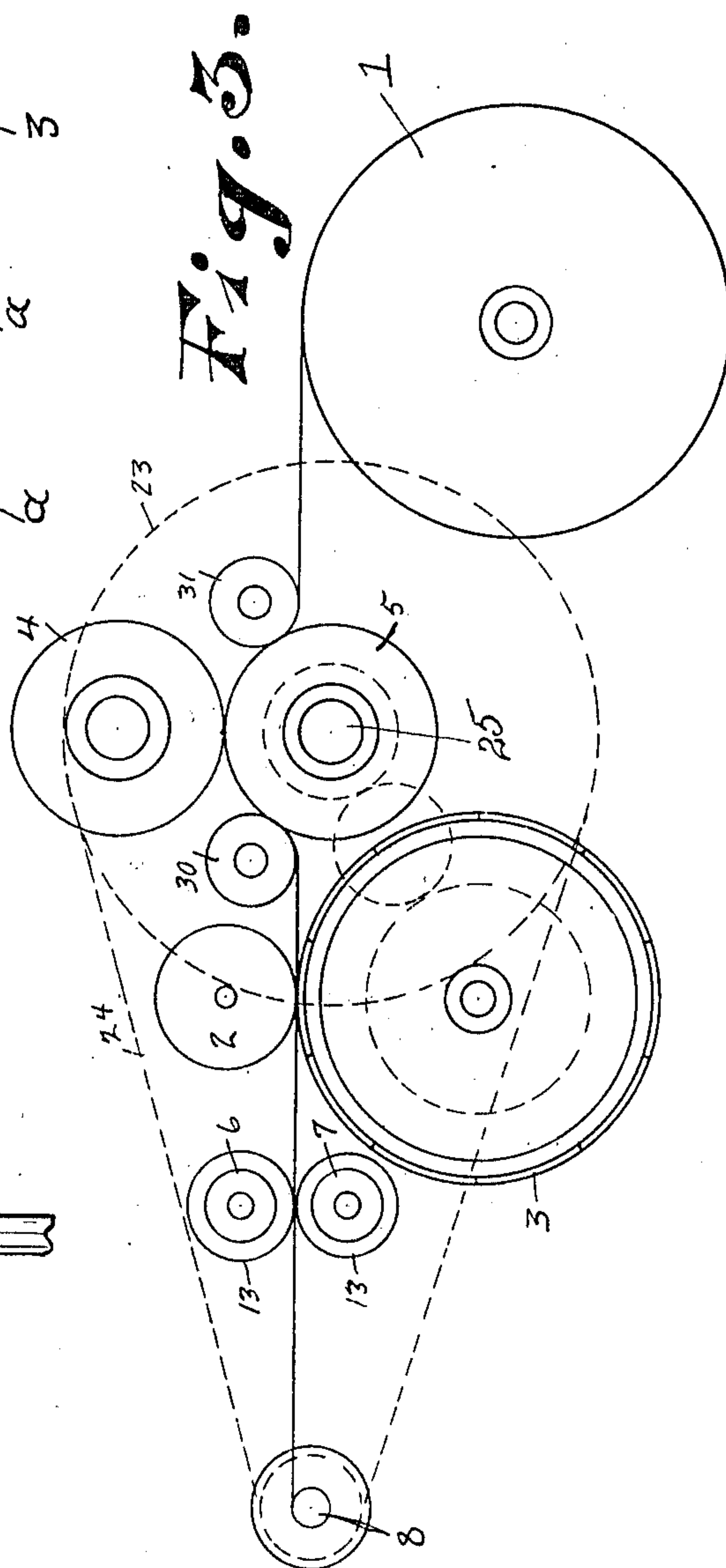
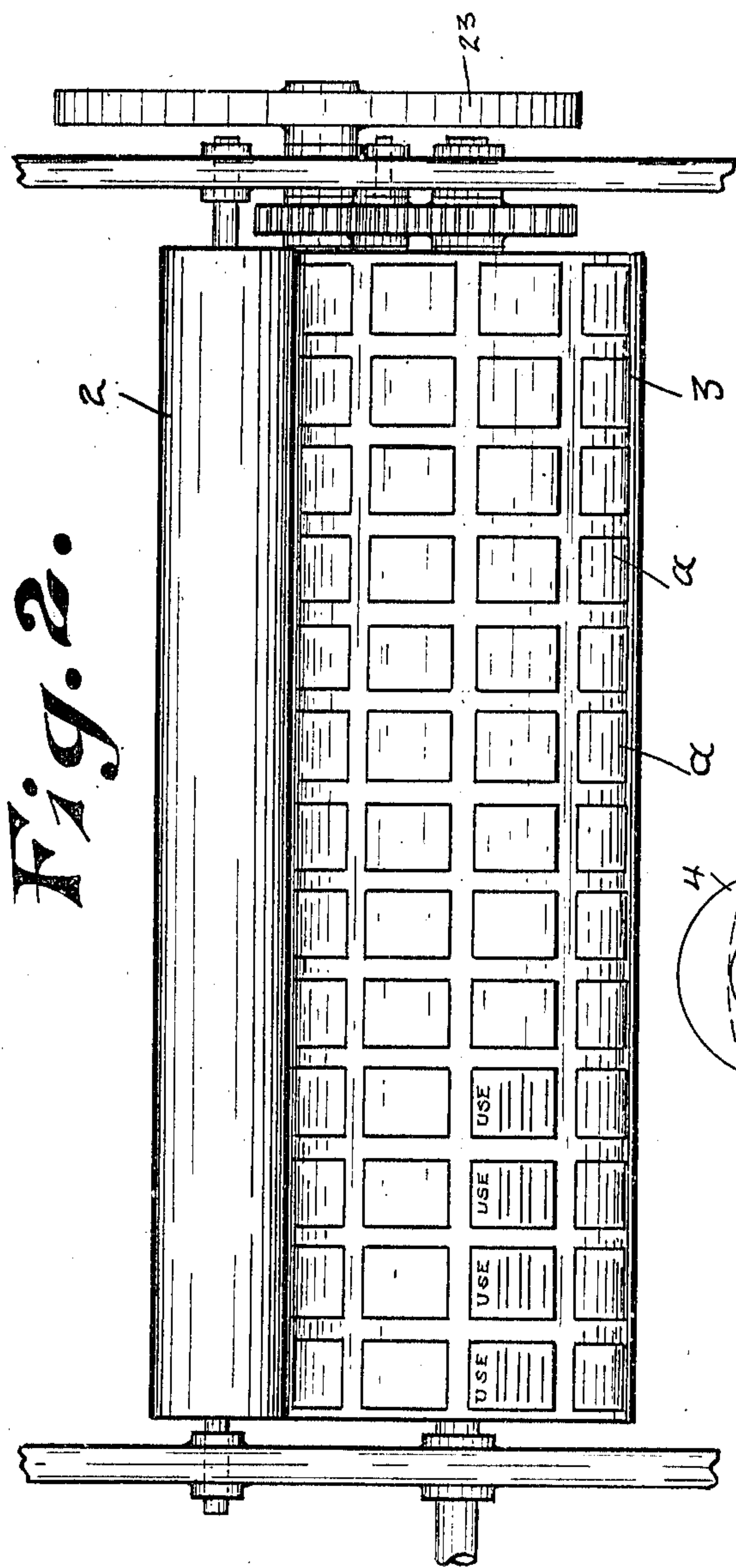
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

FRANK H. HOBERG, OF GREEN BAY, WISCONSIN.

## EMBOSSING ATTACHMENT.

950,482.

Specification of Letters Patent.

Patented Mar. 1, 1910.

Application filed November 19, 1906. Serial No. 344,003.

*To all whom it may concern:*

Be it known that I, FRANK H. HOBERG, a citizen of the United States, residing at Green Bay, county of Brown, and State of Wisconsin, have invented new and useful Improvements in Embossing Attachments, of which the following is a specification.

My invention relates to improvements in embossing attachments for paper slitting and perforating machines.

The object of my invention is to provide means for embossing tissue or toilet paper during the operation of transferring it from a main or primary roll to a series of commercial rolls, cut and perforated preparatory to placing the same on sale, whereby extremely thin paper may be embossed without tearing or perforating it.

A further object of my invention is to provide means for slightly moistening the tissue at the points where it is subjected to the embossing operation and reinforcing it by a colorless sizing whereby the sheet will be strengthened and the embossed letters or characters rendered more permanent.

In the following description, reference is had to the accompanying drawings in which,

Figure 1 is a sectional view of perforating and slitting apparatus embodying my invention. Fig. 2 is a front view of the embossing rollers. Fig. 3 is a diagrammatic view showing a modified construction so far as the location of the embossing rollers is concerned.

Like parts are identified by the same reference characters throughout the several views.

1 is the primary or main roller upon which the paper is wound in a wide strip as it comes from the paper making machine. The paper passes from this roller between the embossing rollers 2 and 3, the perforating rollers 4 and 5, and the slitting rollers 6 and 7, to the receiving roller 8, upon which it is wound in a series of rolls corresponding in number with the slitters which subdivide the main sheet into strips. The specific style or arrangement of the perforating or slitting rollers is, however, not material to this invention and it is therefore unnecessary to describe them in detail further than to say that the perforating roller 4 is provided with toothed perforating blades 10 adapted to register with channels 11 in the roller 5, whereby the paper is partially

severed transversely at suitable intervals in passing these rollers. Also that the rollers 6 and 7 are provided with annular blades 13 at spaced intervals, whereby the paper is slitted longitudinally to form strips of the desired width.

The embossing roller 2 comprises a plain roller of resilient material such as rubber. The surface of the embossing roller 3 is subdivided into a series of sections *a*, each provided with raised letters or characters, adapted, by indenting the tissue paper and pressing the same into roller 2, to form corresponding raised letters or characters in the paper. The several sections are formed on an outer shell covering the roller 2 and composed of a series of segmental members each secured to the body of the roller by screws 14. The sections are of a length equal to the distance between the perforators on roller 4 and of a width equal to the distance between the slitting blades 13, and the embossing rollers and perforating rollers are driven at the same speed and arranged in such relation to each other that the paper will be perforated between the embossed sections. The slitting blades are also arranged to cut the paper into strips between the sections.

In order to facilitate the embossing operation, I have provided means for dampening those portions of the paper which are subjected to strain under the pressure of the embossing characters and preferably use for this purpose a colorless, antiseptic sizing which serves also to strengthen the distended tissue thus producing characters which are more distinct in outline, and less apt to be flattened or pressed out in the roll than would otherwise be the case. The sizing liquid is placed in a tank 15 from which it is delivered by a roller 16 and a train of conveying and distributing rollers 17, 18, 19, and 20, the latter bearing upon the surface of the embossing roller 5. The roller 17 is mounted upon a swinging supporting bracket 21 adapted to permit it to be moved into and out of contact with the rollers 16 and 18, whereby when the sizing is not wanted the roller 17 may be removed from contacting position. This train of rollers may be driven by frictional contact from the embossing roller 3, which may be driven from the shaft 25 of the roller 5 by gears, belts or chains or by the friction of the paper. The roller 5 is mechanically driven and from this, mo-



tion is communicated to the receiving roller 8 through a pulley 23 and belt or chain 24. The roller 1 turns idle and the paper is drawn from it.

5 While it is obvious that the specific location of the embossing roller along the line traversed by the paper is not essential, I prefer to locate it in advance of the slitters 13 which subdivide it into strips and thus in-  
10 crease the risk of tearing during the embossing operation. In Fig. 3 I have illustrated the embossing rollers in a third position, this being made possible by merely moving the slitting rollers outwardly from  
15 the perforating rollers to provide sufficient space for them.

30 and 31 are idle guide rollers. These rollers not only hold the paper firmly to the roller 5, but prevent the slitting blades 13  
20 from pushing the paper into the channels 11 and drawing upon the strip and tearing it at the line of engagement by the embossing rollers. So far as I am aware, the use of  
25 such rollers is novel and they are very necessary where it is desired to emboss and slit the paper in one operation. It will also be  
30 observed that as the rollers 5 and 3 are both positively driven from the shaft 25, while the idle rollers 30 and 31 are driven by frictional contact with the roller 5, or with the  
interposed paper which travels with it, there is no strain upon the strip which would tend to cause it to tear.

By combining in operation, the embossing,  
35 slitting and perforating rollers, it is possible to emboss raised characters in tissue paper without having them destroyed or pressed out in subsequent operations and without tearing the sheets as would be the case if the

separated sheets or strips should be subse- 40  
quently passed through an ordinary embossing machine.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is, 45

1. In a paper perforating and slitting machine for tissue paper, the combination with primary and receiving rollers, and intermediate transversely perforating and longitudinally slitting rollers, arranged to permit  
50 the continuous passage of a strip of paper from the primary to the receiving roller between the perforating and slitting rollers; of a set of idle rollers mounted in fixed bearings and arranged to hold the paper against  
55 one of the perforating rollers on opposite sides of the perforating line, and a set of embossing rollers also interposed between the primary and receiving rollers and arranged  
60 to emboss letters or characters in the paper during its passage from the primary to the perforating and slitting rollers.

2. In a machine of the described class, the combination with primary and receiving rollers, of a set of embossing rollers arranged  
65 to receive the paper between them in passing from the primary to the receiving roller, and means for subdividing the paper during such passage to the receiving roller, together  
70 with means for dampening the embossing characters with a liquid sizing adapted to strengthen the distended embossed tissue.

In testimony whereof I affix my signature in the presence of two witnesses.

FRANK H. HOBERG.

Witnesses:

ROBT. F. BERMIS,

GEO. A. RICHARDSON.